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ABSTRACT

This monograph, organized in two major parts, covers the role of educational needs assessment in adult education and its role in continuing medical education (CME). The first part discusses the concept of educational need and its relationship to classic program planning models and naturalistic program planning. It then covers various assessment approaches and data gathering methods with criteria for model selection. A discussion of the role of needs assessment in guiding the program planning process concludes this first part. The second part presents definitions and the purpose of CME followed by definitions of competence. It then discusses program planning models and approaches to needs assessment in CME. (EM)

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THE ROLE OF EDUCATIONAL NEEDS ASSESSMENT IN ADULT EDUCATION AND CONTINUING MEDICAL EDUCATION PROGRAM PLANNING

A Monograph

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INTRODUCTION

This statement is organized in two major segments. The first segment details the role of educational needs assessment in adult education. The second section outlines the role of educational needs assessment in continuing medical education (CME).

The concept of educational need and its relationship to classical program planning models and naturalistic program planning are discussed in detail. Approaches to needs assessment and data-gathering methods with criteria for model selection are presented.

The role of needs assessment in guiding the program planning processes of adult education and continuing medical education (CME) are discussed in depth.

The need for CME, a definition of continuing medical education, definitions of competence, the purpose of CME, program planning models and approaches to needs assessment in continuing medical education round out the second segment of the paper.

Comparisons and contrasts of the adult education program planning process with the continuing medical education program planning process are made where appropriate. These comparisons and contrasts highlight some of the basic differences and similarities of both processes.

THE ROLE OF EDUCATIONAL NEEDS ASSESSMENT IN ADULT EDUCATION PROGRAM PLANNING

The Concept of Educational Need

Webster's New World Dictionary[1] defines four meanings of the term "need". These are (1) necessity of obligation created by some situation (2) a lack of something useful, required, or desired (3) something useful, required, or desired that is lacking, want, requirement, (4) a condition in which there is a deficiency of something, or one requiring relief or supply.

According to Boyle and Jahn[2], the adult educator has essentially two interpretations of the concept of need. The first interpretation is based upon the assumption of an inherent growth or need-fulfilling tendency in man. For example, Maslow[3] sets forth a hierarchy of human needs in which emergence of one need is usually dependent upon satisfaction of a more basic need. From most basic to most complex, those needs are: (1) physiological, (2) safety, (3) love, (4) esteem, and (5) self-actualization.

Kidd's[4] classification of basic adult needs is confluent with the first assumption. The classification is: (1) health, (2) family and friendship relations, (3) socio-civic relations, (4) consumer aspects of life, (5) occupation, (6) recreation, and (7) religious and philosphical needs.

Knowles'[5] view of human needs include:

1) Physical needs
2) Growth Needs
3) The Need for Security
4) The Need for New Experience
5) The Need for Affection
6) The Need for Recognition

The second interpretation of need is based upon the assumption that equilibrium is a natural state toward which man strives. Need is a condition that exists between what is and what should be, or between what is and that which is more desireable. Need is a key instigator of behavior in that it creates a state of disequilibrium. In this interpretation, a need always implies a gap[6].

McClusky's categories of need are confluent with the second assumption. According to McClusky[7], need implies the existence of a desireable condition requiring the operation of certain factors for its attainment. McClusky identifies four categories of educational need: 1) coping needs, 2) expressive needs, 3) contributive needs, and 4) influence needs.

Coping needs refer to that group of requirements which must be met in order to continue adequate social adjustment, psychological health, and physical well-being.

Expressive needs refer to those areas where individuals engage in activity for its own sake, activity which is undertaken for its own reward and enjoyment.

Contributive needs are those which assume that adults (especially older adults) have a need to repay the community, a need to be useful, and a desire to be wanted.

Influence needs are those needs of adults to affect the quality and direction of their own lives.

Havighurst and Orr[8] identify developmental tasks in adulthood. When there is urgency to meet any of these developmental tasks, anxiety is intensified. This anxiety produces needs or teachable moments. The anxiety identified by Havighurst and Orr is related to the developmental

patterns of adults. It is a gap between role demands or expectations and the coping mechanisms possessed by the adult or potential learner.

The most common definition of need, as discussed in the literature pertaining to needs assessment, is a gap. This notion of gaps reflects the second assumption and interpretation discussed by Boyle and Jahns.

Malcolm Knowles[9] defines educational need as something a person ought to learn for his or her own good, for the good of an organization, or for the good of society. It is the gap between his or her present level of competencies and a higher level required for effective performance as defined by that individual, the organization, or the society. (See Figure 1)

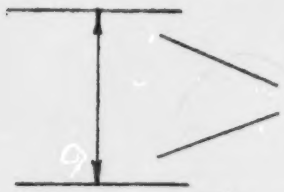


FIGURE 1: Knowles' Illustration of Educational Need

Alan B Knox[10] refers to educational need as a gap between a present, or initial, or existing set of circumstances and some changed set of circumstances may be described in terms of how the individual and/or someone else would have the individual's knowledge, performance and attitudes differ from the initial set of circumstances. (See Figure 2)

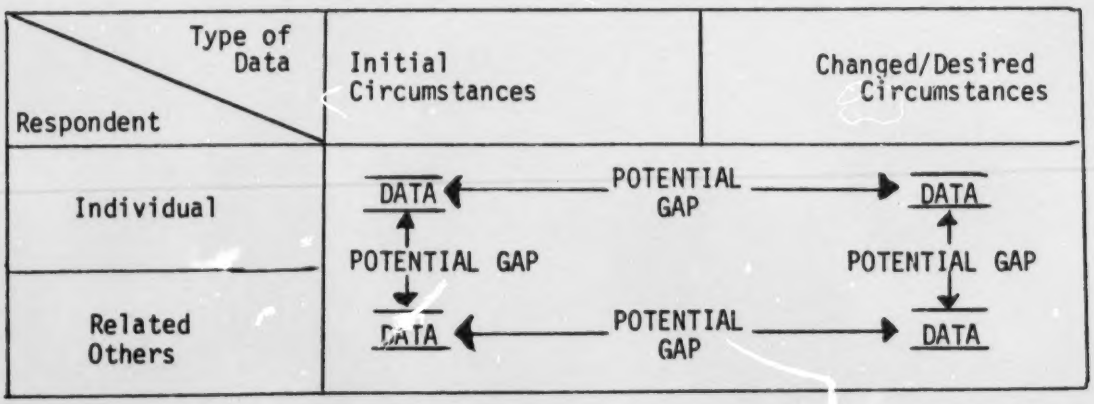


Figure 2: Illustration of Educational Need (Knox, Woods, Means)[11]

Need and Classical Program Planning

Defined educational need is a concept integral to learner oriented instruction. Learner oriented instruction is a construct of modern adult education philosphy[12]. Powell and Benne[13] distinguish two major schools of adult education philosphy. One is the rationalist school which has never had a name for its own philosophy and practice. It operates under many banners: liberal arts, reading-discussion, great books, humanities. The other, the developmentalist school, represents the opposite end of the continuum. It has two conspicuous camps; (1) fundamental education, whose principal apex is community development; and (2) human relations, whose most intenseive focus is group dynamics. For all three schools, (i.e., rationalist, community development, and group dynamics,) the most effective matrix for individual learning is membership in a continuing face-to-face group[13].

> On one side lies individual self-directed learning, by reading or other evocative reflection upon experience. On the other stand lectures and the mass media, which are admitted to have value in communicating knowledge and understanding. The favorite vehicle of adult learning activity is the group . . . however, under all the group and community emphasis, there is a strong and vital agreement on the individual as the learner, the agent of learning of of judgement and acting, the goal and test of all the learning-situations that educators can devise.

The goal of adult/continuing education administrators and program planners is to design and offer programs which fulfill the educational requirements of the target adult population[14]. Successful attainment of this goal depends in part upon reliable information concerning the unmet continuing educaiton needs and interests of adults. Adults demand relevant information -- and programs that provide less cannot be completely effective[16]. Needs assessment is a sine qua non of program planning[17].

Program planning models of Bergevin, Morris, and Smith, Easley, Houle, Knowles, Knox, and London corroborate the significance of educational needs assessment. Because adults do not have to go to school, but undertake adult education courses voluntarily, programs must be based on needs and interests which these students themselves express or which they can be led to recognize. The needs of adults which the educators seek to meet are not just "felt needs" but also the needs which educators impute when they view the gap between what is and what could be if their students achieved their full potential[17].

Bergevin, Morris, and Smith present their "Six-Step Procedure" of adult education program development in Adult Education Procedures[18]:

Step 1 Identifying a Common Need or Interest
Step 2 Developing Topics
Step 3 Setting Goals
Step 4 Selecting Appropriate Resources
Step 5 Selecting Appropriate Techniques and Subtechniques
Step 6 Outlining Each Activity and the Responsibilities to be Carried Out

The authors suggest that identification of a common need (Step 1) must be achieved, if only generally, and that steps 2 and 3 serve to refine the need defined in the first step.

Easley[19] lists five steps to successful program development:

1. Identify the Problem - Determine the educational needs of adults in the community (target population)
2. Make a Judgement about the Possible Program Inputs - Give consideration to those inputs needed to resolve the immediate problem.
3. Determine objectives - Gain specificity. Care should be taken that they are stated in terms that all parties can understand.
4. Design the Program - Consider format, leadership, instructional methods, materials, group cohesiveness, and evaluation strategies.

5. Provide Administrative Supports - Support in guidance, financing, public relations, instruction, evaluation, and general program review.

Easley concludes that program planning and development is both an art and a science. It involves looking at the program from the initial needs assessment to the review of the total program as an entity[20].

In The Design of Education, Cyril O. Houle[21] suggests a cyclical model of program development in which the activities of the seventh step provide input to the first. (See Figure 3)

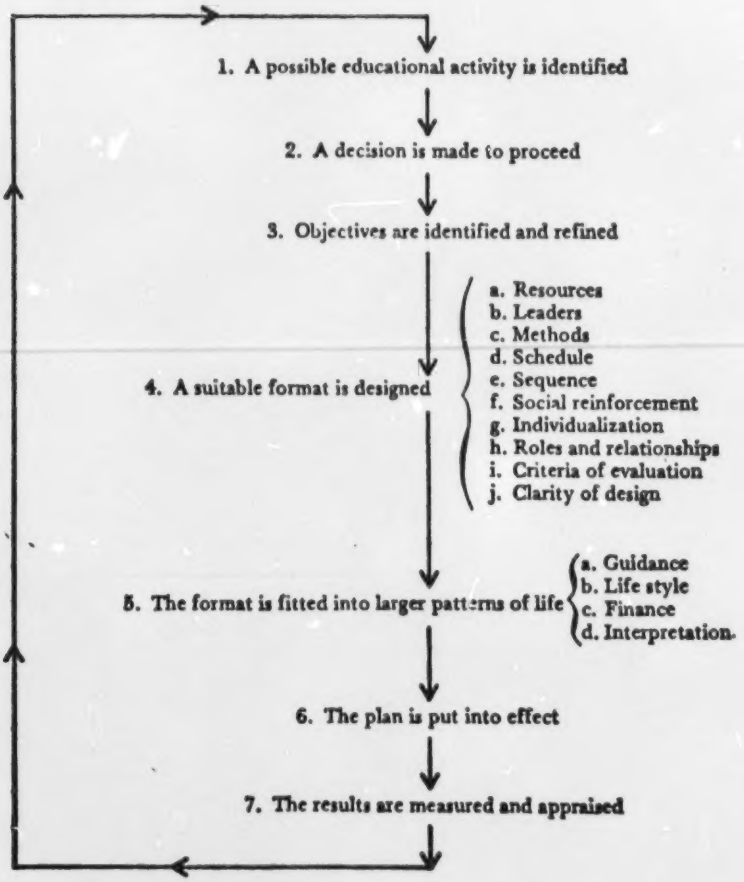

1. A possible educational activity is identified
2. A decision is made to proceed
3. Objectives are identified and refined
4. A suitable format is designed
a. Resources
b. Leaders
c. Methods
d. Schedule
e. Sequence
f. Social reinforcement
g. Individualization
h. Roles and relationships
i. Criteria of evaluation
j. Clarity of design
5. The format is fitted into larger patterns of life
a. Guidance
b. Life style
c. Finance
d. Interpretation
6. The plan is put into effect
7. The results are measured and appraised

Figure 3: Houle's Model of Program Development

Seventh step activities include measurement and appraisal of program outcomes against set program objectives (step 3) and examination of the situation in terms of the possibility of a new educational activity (step 1). Here the cycle of program planning recommences.

The third step of Knowles'[22] "andragogical process of program development is "diagnosis of needs for learning". Knowles suggests that needs for learning may be diagnosed through development of competency models, assessing level of performance, and assessment of learning needs. The author lists the following phases for concise program development:

1. The establishment of a climate conducive to adult learning.
2. The creation of an organizational structure for participative planning.
3. The diagnosis of needs for learning.
4. The formulation of directions of learning (objectives).
5. The development of a design of activities.
6. The operation of the activities.
7. The rediagnosis of needs for learning (evaluation).

There would be no point in evaluating (phase 7) if it did not result in action of some sort. Objectives (phase 4) can be altered in the light of the new needs and interests of participants that have been revealed in the evaluation process.

The program development model of Alan B. Knox[24] includes:

1. Clientele Analysis/Needs Assessment
2. Awareness of Setting
3. Determination of Objectives
4. Selection and Organization of Learning Activities
5. Evaluation

Evaluation information obtained through comparing expectations with performance, monitoring planning activities, monitoring educational activities,

and diagnosing educational activities (stage 5) is returned to stage one (clientele analysis/needs assessment) of the Knox model. The process is a cyclical one.

Jack London[25] lists five steps to successful adult education program development:

1. Determine the needs of the constitutuents
2. Enlist their participation in planning
3. Formulate clear objectives
4. Design a program plan
5. Plan and carry out a system of evaluation

London describes an interdependent relationship of steps 1, 3, and 4. If an activity has clear and immediate relevance to the participant's own particular needs and interests, it will attract and hold them, and thus bring about the desired changes expressed in the objectives[26]. Objectives should be based on determined educational needs.

Need and Naturalistic Planning

Adult and continuing education program development is much like curriculum development within primary, secondary, or higher education. Both program and curriculum development are processes by which a given subject matter is transmitted to a specific audience. They are, in essence, methods of planning -- from the initial conception of an idea through the class project, final examination, or end-of-course critique[27].

> Whereas an entire body of literature exists on curriculum development, many writers in continuing education deal only with what they consider to be either essential aspects of the development process or holistic models. Two such models originating from curriculum design research, and being adapted for either prescriptive or descriptive purposes in continuing education, are the classical model developed by Ralph Tyler (1963) and a more naturalistic model espoused by Decker Walker[28].

The program development models of Bergevin, Morris, and Smith, Easley, Houle, Knowles, Knox, and London depict program development in classical (Tylerian) terms. Knox[29] describes the classical process as one involving five major aspects: (a) needs assessment, (b) determination of objectives, (c) selection and organization of learning activities, (d) evaluation, and (e) institutional arrangements for support.

The naturalistic model can be described as a series of decision points relating to both the explicit design, (i.e., decisions made only after forethought and consideration of alternatives) and the implicit design, (i.e., action based on precedent and habit without the consideration of alternatives. Differences in the two models are succinctly described by Walker[30]:

> This model (naturalistic) is primarily descriptive, whereas, the classical model is prescriptive. This model is basically a temporal one: it postulates a beginning (the platform), and end (the design), and a process (deliberation) by means of which the beginning progresses to the end. In contrast, the classical model is a means-end model: it postulates a desired end (the objective), a means for attaining this end (the learning experience), and a process (evaluation) for determining whether the means does indeed bring about the end. The two models differ radically in the roles they assign to objectives and to evaluation in the process of curriculum (program) development.

Objectives are essential in the classical model; since, without an objective, learning experiences cannot be rationally selected and assessed. Objectives are not required in the naturalistic model, since they are only one of many means for guiding the search for better educational programs.

Evaluation in the classical model is a self-corrective process meant to erase speculation in determining whether learning experiences

lead to the attainment of given objectives. This kind of evaluation is not logically necessary in the naturalistic model. Although empirical data can be compelling evidence in a justificatory argument, design decisions can be justified by reference to the platform only.

Walker describes the platform as the system of beliefs and values that the program developer brings to his task and that guides the development of the program. The platform includes an idea of what is and a vision of what ought to be, and these guide the program developer in determining what he should do to realize his vision[31].

Deliberation, second element of the naturalistic model, is characterized by Schwab[32] as follows:

> Deliberation is complex and arduous. It treats both ends and means and must treat them as mutually determining one another. It must try to identify, with respect to both, what facts may be relevant. It must try to ascertain the relevant facts in the concrete case. It must generate alternative solutions. It must make every effort to trace the branching pathways of consequences which may flow from each alternative and affect desiderata. It must then weigh alternatives and their costs and consequences against one another, and choose, not the right alternative, for there is no such thing, but the best one.

Design is the third element of the naturalistic model. It is the set of abstract relationships embodied in the designed object. The design is the theoretically significant output of the program development process -- the set of relationships embodied in the materials-in-use which are capable of affecting students[33]. Design may be specified by the series of decisions that produce it. The main components of the naturalistic model are illustrated in Figure 4:

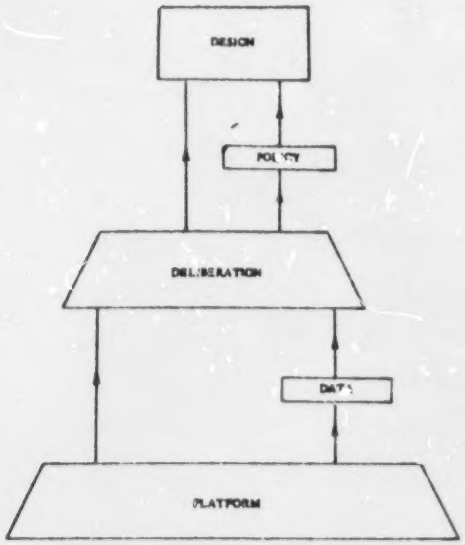


Figure 4: A Schematic Diagram of the Main Components of the Naturalistic Model

The concept of educational need is integrated in the platform, deliberation and design elements of the naturalistic model. Platform includes a vision of what is and what ought to be. Deliberation must ascertain relevant facts and identify desiderata. Design is the significant output of the program development process. In both models (classical and naturalistic), learner need may be identified as the raison d'etre of program planning activities.

Approaches to Needs Assessment

An educational needs assessment is defined as a systematic process for identifying and documenting conditions of human or organizational need which educational services can help resolve[34]. There is no one universally accepted model of the process. In her [illegible]s on educational needs assessment, Barbulesco[35] finds:

> A review of literature about "needs assessment" indicates that other terms, such as "need identification" (Campbell and Markle: 1968), "need analysis" (Knox: 1969), "discrepancy analysis" (Kaufman: 1972), and "need diagnosis"

(Atwood: 1973; Atwood and Ellis: 1973; Mendenhall: 1973), are used to refer to the needs assessment process.

Few needs assessment models or instruments have been extensively field tested for validity and reliability[36].

McKinley[37] identifies three families of educational needs assessment models: (1) Individual self-fulfillment models, (2) Individual appraisal models, and (3) System discrepancy models. Each family is formed of two types of models (See Figure 5).

Families of Educational Needs Assessment Models:	Individual Self-Fulfillment	Individual Appraisal	System Discrepancy
Types of Models Within the Family:	1. Random Appeal	1. Collaborative Individual Appraisal	1. Problem-Need
	2. Selective Appeal	2. Self-Appraisal	2. Goal-Identification

Figure 5: McKinley's Classification of Educational Needs Assessment Models

"Random Appeal" and "Selective Appeal" models form the first family (i.e., Individual Self-fulfillment). With Random Appeal models, all adults in the community are viewed as potential participants in the program that is to result from the diagnosis (needs assessment). Needs are usually defined as individual interests that are potent enough to involve participants in the program. The result of a diagnosis is usually a broad cafeteria-type program that attracts a large number of persons. Data gathering methods include telephone surveys, questionnaire surveys, advisory committee recommendations, suggestion boxes, interviews, and various combinations of such procedures. Need is identified when a sufficient number of persons indicate that they will participate in an activity thus making it economically feasible[38].

Selective Appeal models focus on the needs of a known segment of the population (e.g., women, retirees, or those who have not completed high school). Clients may be known as individuals and solicited as

learners on the basis of their interest in or presumed need for the subject matter of a particular program. "Continuing Education for Women" and "Pre-retirement Education" are examples of programming which result from this type of need assessment. Such programs are generally not based on local diagnosis, but rather on research data, packaged materials and program formats already tested with the specialized population.

Individual Appraisal models, McKinley's second family of diagnostic models, are those in which the clients are usually consciously involved in determining their learning needs. The processes are either collaborative or non-collaborative. "Collaborative Individual Appraisal" models include both one-to-one approaches (as between client and counselor) and group approaches in which individual needs are assessed as a function of the group[34]. "Self-appraisal" models are non-collaborative. The learner may choose to utilize scales and other instrumented exercises, or a group setting (as in value clarification), but self-diagnosis is conceived as an individual task and a function of individual experience in such a group setting. Self-diagnosis is not necessarily an explicit group goal or a cooperative function in which the findings are revealed to the group. The concepts of collaborative and non-collaborative approaches to needs assessment are supported by Atwood[40], and Stubblefield and Roberts[41].

System Discrepancy models are termed discrepancy models because they either assume the existance of, or attempt to identify, the gap or discrepancy between "what is" and "what ought to be" in a social system[43]. The social system is usually an organization, a sub-unit of an organization, or a community. These models generally approach educational needs as deficiencies of knowledge and skills. The knowledge and skills are seen

as necessary either to solve system problems or to attain some desired, specified endstate.

The "Problem-Need" approach is one type of System Discrepency model. "Goal-Identification" is the other. The Problem-Need model facilitates development of programs that are remedial in nature. Programs are remedial, since educational needs and derived educational objectives are related directly to diagnosed difficulties in the target system. The Goal-Identification model facilitates educational programming with a general improvement thrust rather than a specific remedial focus. It assumes that educational objectives which are carefully derived from the official goals of the client system, will reflect desired learning outcomes that some educators would term needs[43].

Kaufman[44] discusses inductive (Type I), deductive (Type D), and classical (Type C) approaches to needs assessment. Sources of data, the degree of involvement of clients in the needs assessment process, and the extent of systemization of needs assessment procedures used are criteria utilized by Kaufman to differentiate the three models. (See Figure 6)

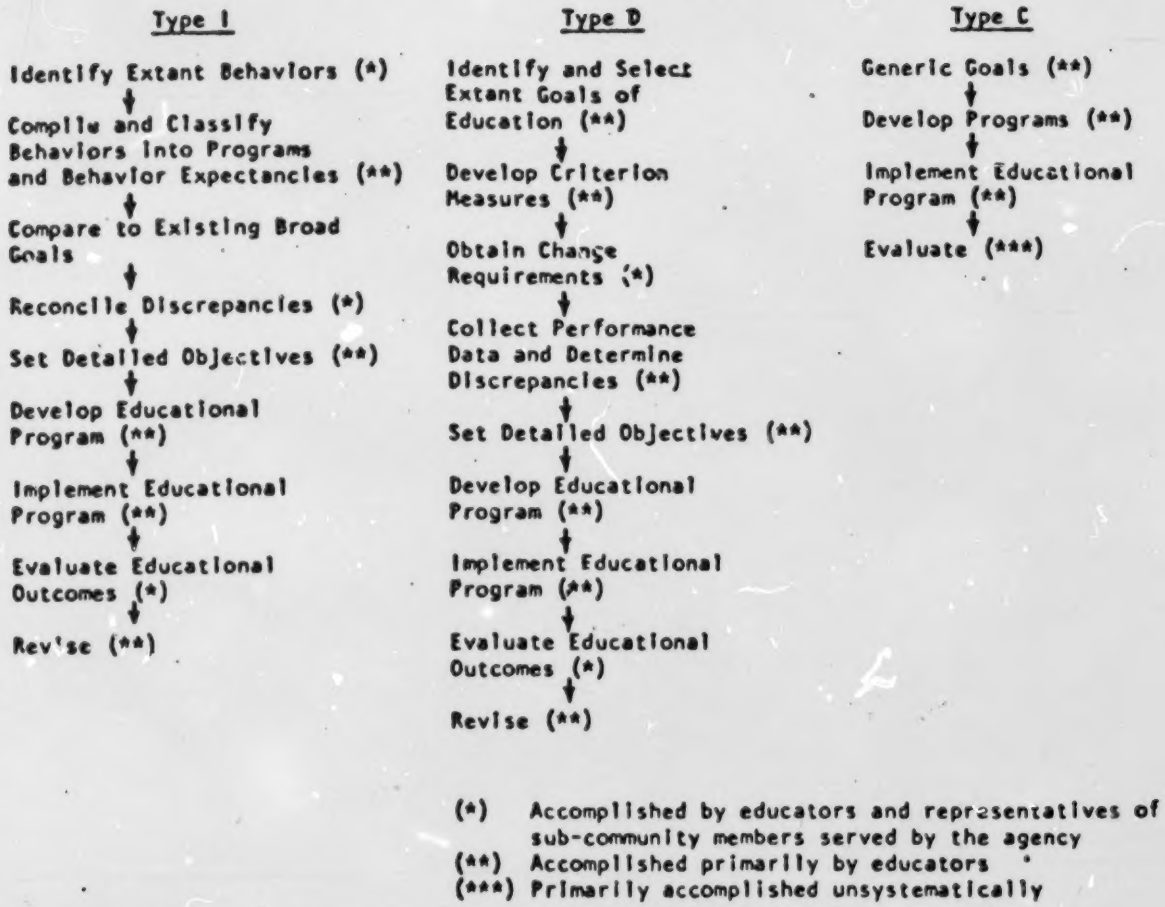

Type I
Identify Extant Behaviors (*)
Compile and Classify Behaviors into Programs and Behavior Expectancies (**)
Compare to Existing Broad Goals
Reconcile Discrepancies (*)
Set Detailed Objectives (**)
Develop Educational Program (**)
Implement Educational Program (**)
Evaluate Educational Outcomes (*)
Rev'se (**)
Type D
Identify and Select Extant Goals of Education (**)
Develop Criterion Measures (**)
Obtain Change Requirements (*)
Collect Performance Data and Determine Discrepancies (**)
Set Detailed Objectives (**)
Develop Educational Program (**)
Implement Educational Program (**)
Evaluate Educational Outcomes (*)
Revise (**)
Type C
Generic Goals (**)
Develop Programs (**)
Implement Educational Program (**)
Evaluate (***)
(*) Accomplished by educators and representatives of sub-community members served by the agency
(**) Accomplished primarily by educators
(***) Primarily accomplished unsystematically

Figure 6: Kaufman's Generic Strategies for Assessing Educational Needs and Identification Goals

Although stated criteria and characteristics of Kaufman's inductive and deductive models differ, these models coincide with McKinley's Problem-Need and Goal-Identification models, respectively. The Type I and Problem-Need models begin with a search for extant behaviors from which educational goals (objectives) may be derived. The Type D and Goal-Identification models begin with the identification of extant goals which may facilitate educational programming that reflects desired learning outcomes.

Hand[15] discusses three approaches to needs assessment: 1) the social welfare approach, 2) the ecological approach, and 3) a community development approach. The first two approaches are differentiated by

what is being examined: social agencies, institutions, and services; or temporal and spacial relations of people in a community unit. The two approaches are mutually exclusive. The third approach (community development) is utilitarian in nature. Needs assessment is viewed in terms of its outcomes, (i.e., identified needs), and as an educational process that can bring participants together who may then engage in social change.

Just as there is no universally accepted educational needs assessment model, so there is no one generally used set of criteria for judging models. In the absence of such criteria, Witkin[46] suggests the following list of questions as guidelines to model selection:

1. General model characteristics
   - Does it have all the components of a complete model?
   - Has it been field tested and evaluated?
   - Is it easily replicable?
   - Does it provide for broad and widespread participation of the educational and lay community?
   - Is the cost reasonable, and commensurate with the benefits to be gained?
   - Does it have a clear management structure?

2. Technical characteristics
   - Are all the steps clearly explained and illustrated?
   - Are the limitations of the method stated?
   - Are the forms or instruments clear?
   - If no forms are provided, are there instructions for local development?
   - Are the data to be collected unambiguous? Is a distinction made between process/learner and outcome/institutional needs, and between "needs", "solutions", and "resources"?
   - Does it appear to have validity - i.e., will the process actually generate the data anticipated or needed?
   - Are methods given for synthesizing objective and subjective data?

3. Contextual criteria

   - Is the model adjustable to local conditions?
   - Is it designed to develop a reasonable list of recommendations for action?

- Will the procedures be acceptable to different ethnic, cultural, and socioeconomic groups? Are non-English versions of the materials available for non-English-speaking participants?
- Does it have a built-in mechanism for continuity and easy transition to a succeeding model for the next stage?
- Does it provide some mechanism for renewal of the system, anticipating and responding to social changes?
- Is there a mechanism for evaluation of the progress and of the outcomes of the needs assessment itself?

Development of models is still in the beginning stages[47]. Models which may rate high on some criteria may rate lower on others. Criteria which have the most meaning to the selector should be applied to models which have the most suitable general set of characteristics.

Needs Assessment Data-gathering Methods

Verner[48] encourages the adult educator to know the age, sex, occupation, previous education, area of residence, stage in the life cycle, political orientation, level of aspiration, level of achievement, attitudes and a vast array of other social, physiological, and psychological characteristics of his or her participants in order to design learning experiences to meet their needs. Knowles[49] identifies six general methods for obtaining such information.

Interviews provide the best method for enabling the researcher to understand how and why participants feel as they do. Understanding participants' feelings is vital to any educational effort.

Written questionnaires enable the researcher to reach a large number of people in a relatively short period of time. Ideally, respondent's feelings can be recorded and and processed quickly, anonymously, and without the embarassment or anxiety which may accompany more personal techniques.

Management records and reports may provide clues to educational needs. Absenteeism, tardiness, turnover, audit reports, and production records are reasonably objective evidence which can supplement other need information.

Tests can aid in determining whether a deficiency exists in knowledge, or skills, or attitudes of the adult learner. Performance or achievement tests are essentially means of sampling what learners know or can do, and can therefore help to locate areas in which more information or more skill training is needed.

Group problem analysis is particularly effective in the organizational setting. Groups of supervisors in a given division bureau, for example, might analyze the causes of these problems to analyze the causes of these problems, and to decide what changes are necessary to solve the problem.

Job analysis combined with performance appraisal is an effective technique. It is time consuming and consists largely of observation and personal inquiry of supervisors, and employees. Analysis is complex and expensive.

Figure 7 lists general methods of needs determination, as well as advantages, limitations, and assorted rules of application for each method:

METHOD	ADVANTAGES	LIMITATIONS	DO'S AND DON'TS
Interview	Reveals feelings, causes, and possible solutions of problems as well as facts. Affords maximum opportunity for free expression of opinion, giving of suggestions.	Is time-consuming, so can reach relatively few people. Results may be difficult to quantify. Can make subject feel he is "on the spot."	Pretest and revise interview questions as needed. Be sure interviewer can and does listen, doesn't judge responses. Do not use to interpret, sell, or educate.
Questionnaire	Can reach many people in short time. Is relatively inexpensive. Gives opportunity of expression without fear or embarassment. Yields data easily summarized and reported.	Little provision for free expression of unanticipated responses. May be difficult to construct. Has limited effectiveness in getting at causes of problems and possible solutions.	Pretest and revise questions and form as needed. Offer and safe guard anonymity. Use only if prepared to -- - report findings, both favorable and unfavorable. - do something about them.
Tests	Are useful as diagnostic tools to identify specific areas of deficiencies. Helpful in selecting from among potential trainees those who can most profitably be trained. Results are easy to compare and report.	Tests validated for many specific situations often not available. Tests validated elsewhere may prove invalid in new situations. Results give clues, are not conclusive. Tests are second-best evidence in relation to job performance.	Know what test measures. Be sure it is worth measuring here. Apply results only to factors for which test is good. Don't use tests to take blame for difficult or unpopular decisions which management should make.
Group Problem Analysis	Same as for interview, plus: Permits synthesis of different viewpoints. Promotes general understanding and agreement. Builds support for needed training. Is in itself good training.	Is time-consuming and initially expensive. Supervisors and executives may feel too busy to participate, want work done for them. Results may be difficult to quantify.	Do not promise or expect quick results. Start with problem known to be of concern to group. Identify all problems of significant concern to group. Let group make own analysis, set own priorities
Job Analysis and Performance Review	Produces specific and precise information about jobs, performance. Is directly tied to actual jobs and to on-the-job performance. Breaks job into segments manageable both for training and for appraisal purposes.	Time-consuming Difficult for people not specifically trained in job analysis techniques. Supervisors often dislike reviewing employees' inadequacies with them personally. Reveals training needs of individuals but not those based on needs of organization.	Brush up on job-analysis techniques, arrange special training for those who are to do it. Be sure analysis is of current job, and current performance. Review with employee both-- - analysis of job, and - appraisal of performance
Records and Reports Study	Provide excellent clues to trouble spots. Provide best objective evidence of results of problems. Are usually of concern to and easily understood by operating officials.	Do not show causes of problems, or possible solutions May not provide enough cases (e.g., grievances) to be meaningful. May not reflect current situation, recent changes.	Use checks and clues, in combination with other methods.

Figure 7. Knowles' General Methods of Need Determination

Kempfer[50] lists thirteen possible methods of identifying educational needs and interests. They are:

1) individual requests for courses,
2) check lists and other "interest finders",
3) check with other known interests of people (e.g., library reading interests, newspaper -and magazine- readership surveys),
4) sensitivity to civic, personal, and social problems of people - problems which can be alleviated by education,
5) act on a "hunch"
6) examine catalogues, schedules, publicity materials, and programs of comparable institutions,
7) examine published surveys of other communities and similar literature,
8) systematic survey of the industrial, business, civic, and cultural life of the community,
9) examine data from the census and similar sources,
10) study deficiencies of adults (e.g., poor nutrition, low educational level, lack of civic participation, poor methods of child rearing),
11) requests from business, industry, labor, and community groups,
12) systematically cultivate a group of "coordinators" in industry, business, and other community organizations and agencies who watch for every opportunity for education to perform a service, and
13) maintain an extensive personal acquaintance with a wide range of community leaders and groups.

Kempfer[51] describes each method. He states that the easiest way for planners to find out what adults want to learn is to be alert to their individual requests for courses. "Careful directors," he says, "keep cumulative lists of all inquiries and encourage the inquirers to interest enough others to warrant starting the courses".

Programs built on requests from business, industrial, labor, and community groups are ordinarily much larger than those catering merely to the expressed or implicit needs of individuals. The best programs are those in which planners cultivate a group of coordinators in industry, business, and other community organizations. As the coordinators' competencies in identifying educational needs increases, much of the work of defining needs is done before the problem reaches the director. Contact

with community groups and leaders also enables the program planner to be sensitive to civic, personal, and social problems of the people. There is no substitute for wide personal acquaintance with community leaders.

Systematic surveys of the industrial, business, civic, and cultural life of the community often lead to significant insights. If the adult education planner can share in planning community surveys of cultural resources, occupational trends, recreational activities, and community leadership structures, he/she may maximize their use in identifying educational needs. Examinations of published surveys of other communities and similar literature are almost as revealing of educational need as are original surveys.

Where little time and money are at stake, hunches may pay dividends. Only a few planners are able to identify the components of a hunch. Some directors depend upon check lists of interests which are distributed in classes or at meetings of community (target learner) groups. Check lists are often unreliable because needs may change between tabulation of results and implementation, and check lists often start with program possibilities rather than needs of adults. Planners may test public interest in an activity by publicizing it. If there is enough response, the activity materializes; otherwise it fails.

Data from the census and similar sources statistically portray social and economic conditions in various major and minor political subdivisions. Magazines, newspapers, and libraries are likely to have reliable information on the reading habits and interests of adults; the chamber of commerce on economic conditions; social agencies, on the welfare load and the specifics of family and community disorganization; the housing office and real-estate people on the migration pattern.

"Indeed," states Kempfer, "it is difficult to find a private agency which

cannot throw some light on the educational needs and interests of adults."

Published surveys of other communities and similar literature may be a useful needs assessment technique, but the value of this technique is somewhat limited by the difficulty of finding totally comparable populations. This same limitation applies to examination of catalogues, schedules, publicity materials, and programs of comparable insitutitions.

Deficiencies of adults often indicate educational needs and provide one point of departure in program building. Adults may be largely unaware of inadequacies which are revealed by surveys and statistics. Yet, malnutrition, ill-health, and family disorganization may indicate important educational tasks.

Kempfer points out that in any needs analysis it is important (1) to break down the adult population in several ways so that the most useful grouping can be identified, (2) to analyze the educational needs and interests of each group, and (3) to develop educational activities in terms of those needs and interests.

In her review of literature relevant to needs assessment, Barbulesco[52] identifies ten needs assessment techniques. She describes: 1) hunches, 2) publicity, 3) requests, 4) reports, publications, and records, 5) external consultants, 6) observation, 7) tests and examinations, 8) personal contacts with community leaders, and agency and organization personnel, 9) survey, and 10) groups, advisory committees, and task forces.

Barbulesco's description of hunches is essentially identical to that of Kempfer. Publicity is described as a "one-way street" in that it does not invite or stimulate requests for new programs, but it is useful in providing statements of policy.

Reliance solely upon requests limits the focus of educational programs to the expressed needs of the most vocal individuals or groups, or of those who have the power to exert political pressure on an educational agency. Swift action on duplicated requests nearly ensures participation.

Reports, publications, and records include policy statements, such as statements of training requirements in organizations; and catalogues, schedules, publicity materials, and programs offered in comparable institutions. Census reports, reports of private and governmental agencies, and records of various types can be tapped as indicators of possible need. The overlap of this technique with four methods, (i.e., numbers 3, 6, 7, and 9) discussed by Kempfer is apparent.

Process or subject-matter experts from outside the educational setting in which a needs assessment study is being conducted may serve as external consultants. External consultants can provide new information and insights about theory, facts, principles, and concepts that relate to determining educational needs. A possible disadvantage in using external consultants is that such individuals may not have a full grasp of the complexities and interrelationships of persons within a particular setting.

Although observation may provide clues to problems, it is time-consuming, requires special training for observers, and risks producing anxiety on the part of those being observed.

Tests and examinations are used: 1) as a technique to evaluate learner progress, and 2) as a diagnostic tool for identifying specific areas of learner deficiencies. Barbulesco, Knowles, and Copeland[53] submit that tests and examinations can measure levels of knowledge as well as quality of performance. (See Figure 7, Knowles, General Methods of Need Determination.)

Systematically developing and maintaining personal contacts with community leaders, and agency and organization personnel is one of the most effective ways to assess educational needs[54]. Key individuals in groups and organizations may serve as liasons between the group and organization and the educational institution.

Survey is the most widely used technique for needs assessment. The relative advantages and disadvantages of personal interviews and written questionnaires are listed under Knowles' general methods.

Copeland[55] discusses another approach to identifying needs. The Critical Incident Technique, according to Copeland, is useful in that it is empirically based, identifies both effective and ineffective behavior, and provides a basis for identifying problems. Respondents are asked to think of a recent experience of a highly specific type and asked both to describe who was involved, as well as what led to the incident. The approach is time-consuming. A large number of cases may be required and special training is needed by the individuals who must gather the information.

Kaufman[56] describes the Delphi Technique as a method used to forecast the development and timing of future events. It is a type of survey which relies primarily on the combined expertise of several selected authorities. Chosen experts in a variety of fields related to the assessment of particular educational needs receive a series of questionnaires. Each questionnaire is based on the results of the previous one. Each respondent is allowed to change his or her views as opinions and information of others are provided to him or her. In other words, there is a collection of responses to questionnaire items eliciting information about the long-range future of educational needs. This information is then summarized and returned to

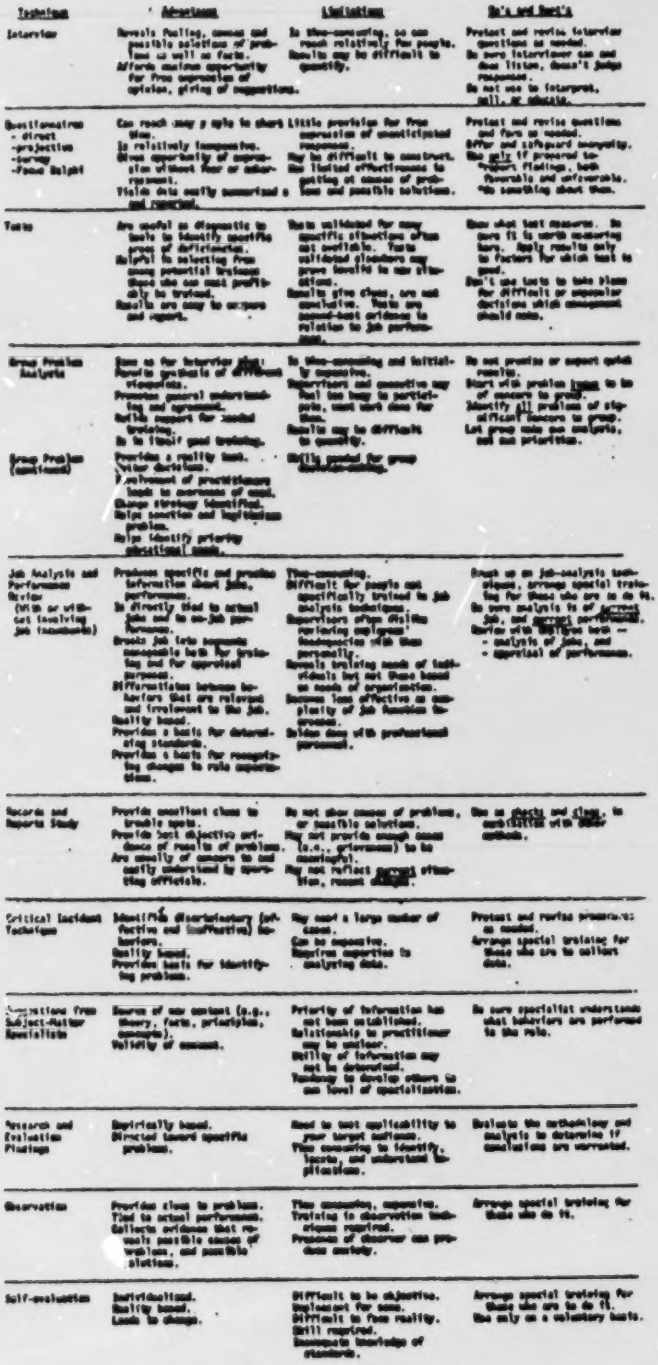
the group until a final normative indication of need is presented. Effectiveness of the Delphi Technique is partially determined by the decision regarding who comprises the pool of experts. Group interaction, discussion, and debate are eliminated, since experts responses are closely controlled sole reliance upon this technique limits the needs assessment process strictly to expert participation. Survey technique in general is limited by a temporal factor. That is, opinions expressed on a questionnaire are only opinions expressed at one point in time[57]. They are not necessarily commitments on the part of respondents.

To encourage groups of citizens to share perceptions of educational need creates more public awareness of both the complexity of such needs, as well as the necessity for a systematic and cooperative approach to meeting them. Groups, advisory committees, and task forces used in needs assessment and community analysis facilitate a more direct exchange of information between the educational institution and the target learner group or community. Representatives of the community or potential learner population may meet to voice their opinions about educational needs with a minimum of structure to limit such expressions.

More formalized groups, (i.e., advisory groups and/or committees), may vary greatly in size and responsibility. Kempfer[58] refers to: 1) special-area committees which address limited areas (e.g., course problem or task), and are considered most helpful in need identification, and 2) general committees which usually provide a rough estimation of needs in broad areas, such as development of family-life, public-affairs education and inter-cultural understanding.

The task force draws its members primarily from organizations and institutions. It is another group utilization technique. Task force members are usually experts, specialists, or leaders in some capacity. These individuals generally have specific assignments, roles or responsibilities within the needs assessment process. It is a quick, economical method of aiding in determination of a population's felt needs by interviewing a cross-section of leaders using a task force of faculty and staff members as interviewers[59].

Copeland[60] discusses general techniques of need determination. Techniques identified in Copeland's discussion consolidate those lists of Knowles, Kempfer, and Barbulesco. (See Figure 8).



Technique	Advantages	Limitations	Do's and Don't's
Interview	Reveals feeling, concern and possible solutions of problems as well as facts. Affords maximum opportunity for free expression of opinion, giving of suggestions.	Is time-consuming, so can reach relatively few people. Results may be difficult to quantify.	Pretest and revise interview questions as needed. Be sure interviewer can and does listen, doesn't judge responses. Do not use to interpret, sell, or educate.
Questionnaires - direct -projective -survey -Force Delphi	Can reach many people in short time. Is relatively inexpensive. Gives opportunity of expression of ideas without fear of embarrassment. Yields data easily summarized and reported.	Little provision for free expression of unanticipated responses. May be difficult to construct. Has limited effectiveness in getting at causes of problems and possible solutions.	Pretest and revise questions and form as needed. Offer and safeguard anonymity. Use only if prepared to support findings, both favorable and unfavorable. Do something about them.
Tests	Are useful as diagnostic tools to identify specific areas of deficiencies. Helps in selecting from among potential trainees those who can most profitably be trained. Results are easy to analyze and report.	Tests validated for many specific situations often not available. Tests validated elsewhere may prove invalid in new situations. Results give clues, are not conclusive. Tests are second-best evidence in relation to job performance.	Know what test measures. Be sure it is worth measuring here. Apply results only to factors for which test is good. Don't use tests to take place for difficult or unpopular decisions which management should make.
Group Problem Analysis Group Problem (continued)	Same as for behavior plus: Reveals symptoms of difficulties or opportunities. Promotes general understanding and agreement. Builds support for needed training. Is in itself good training. Provides a reality test. Other definitions. Involvement of practitioners leads to awareness of need. Change strategy identified. Helps question and hypothesize problem. Helps identify priority educational needs.	Is time-consuming and difficult to supervise. Supervisors and executives may feel too busy to participate, want work done for them. Results may be difficult to quantify. Skills needed for group discussion-leading.	Do not promise or expect quick results. Start with problem known to be of concern to group. Identify all problems of significant concern to group. Let group rank own problems, and set priorities.
Job Analysis and Performance Review (With or without involving job incumbents)	Produces specific and precise information about jobs, performance. Is directly tied to actual jobs and to on-job performance. Breaks job into components manageable both for training and for appraisal purposes. Differentiates between behaviors that are relevant and irrelevant to the job. Quality based. Provides a basis for determining standards. Provides a basis for recognizing changes in role expectations.	Time-consuming. Difficult for people not specifically trained in job analysis techniques. Supervisors often dislike exploring employees' incompetence with them personally. Reveals training needs of individuals but not those based on needs of organization. Becomes less effective as complexity of job function increases. Seldom done with professional personnel.	Break up an job-analysis technique, arrange special training for those who are to do it. Be sure analysis is of current job, and accepted performance. Review with employee both - - analysis of jobs, and - appraisal of performance.
Records and Reports Study	Provide excellent clues to trouble spots. Provide best objective evidence of results of problems. Are usually of concern to and easily understood by operating officials.	Do not show causes of problems, or possible solutions. May not provide enough cause (e.g., grievances) to be meaningful. May not reflect current situation, recent changes.	Use as checks and clues, to confirm with other methods.
Critical Incident Technique	Identifies discriminatory (effective and ineffective) behaviors. Quality based. Provides basis for identifying problems.	May need a large number of cases. Can be expensive. Requires expertise in analyzing data.	Pretest and revise procedures as needed. Arrange special training for those who are to collect data.
Suggestions from Subject-Matter Specialists	Source of new content (e.g., theory, facts, principles, concepts). Validity of content.	Priority of information has not been established. Relationship to practitioner may be unclear. Utility of information may not be determined. Tendency to develop others to own level of specialization.	Be sure specialist understands what behaviors are pertinent to the role.
Research and Evaluation Findings	Empirically based. Directed toward specific problem.	Need to test applicability to your target audience. Time consuming to identify, locate, and understand implications.	Evaluate the methodology and analysis to determine if conclusions are warranted.
Observation	Provides clues to problem. Tied to actual performance. Collects evidence that reveals possible causes of problem, and possible solutions.	Time consuming, expensive. Training in observation techniques required. Presence of observer can produce anxiety.	Arrange special training for those who do it.
Self-evaluation	Individualized. Quality based. Leads to change.	Difficult to be objective. Unpleasant for some. Difficult to face reality. Skill required. Inadequate knowledge of standards.	Arrange special training for those who are to do it. Use only as a voluntary basis.

Figure 8: Copeland's General Techniques of Need Determination (See Appendix A)

Copeland treats self-evaluation as a separate method. He cautions that this method may be unpleasant for some, and that it is difficult to be objective in self-evaluation. The accuracy of self-assessment is limited by the individual's familiarity with standards, but the assessment is individualized.

Methods of needs assessment range from highly systematic and comprehensive, (e.g., critical incident technique, job analysis/performance review, and research findings) to the very simple and unsystematic, (e.g., observation, and hunches). Propriety of individual methods varies with each setting. The researcher who limits himself to a single method severely limits his ultimate ability to understand the potential learner group. Kaufman[61] states:

> Tools and techniques for needs assessment must be selected, evolved, or invented based on the unique conditions and circumstances of each educational context.
>
> The field of needs assessment is indeed a fledgling one. Many models and procedures are being tried, modified, and reapplied. Professionals specializing in this difficult area emphasize the tentative nature of any models or procedures extant.

Needs assessment may be conducted collaboratively, (e.g., groups, advisory committees, and task forces), by the researcher/program planner alone, (e.g., observation) or by the learner alone (e.g., self-evaluation). Selection of methods must be based upon both purpose of the proposed needs assessment and available resources in terms of time, money, and personnel.

The Role of Needs Assessment

The most critical question related to the needs assessment process is "Why conduct a needs assessment?" Grabowski[62] responds that there is a need for an operational philosophy -- a dynamic practical instrument that is used periodically or continuously for making decisions on matters related to education.

Needs assessments gather qualitiative and/or quantitative information so that decision-makers in education can better determine the nature, extent and priority of educational needs. Educators use this information to change and improve education--to make education generally more effective. Barbulesco[63] finds:

> The ultimate purpose of a needs assessment is to provide an empirical basis for decision-making about matters related to education, for example, the allocation of resources or the content area, style of teaching or learning and general organization of educational programs. If educators bypass the needs assessment process, according to English and Kaufman (1975), then there is no comparable method for determining the adequacy of educational programs on the basis of validated criteria. In as much as the needs assessment cycle is a continuous process, an educational program as a means to an end is also a continuous process and must be shaped and reshaped to maintain its relevancy, reliability, validity, and over-arching purposes.

The role of educational needs assessment in the adult education program planning process may be described in terms of what it does. What does educational needs assessment do? At least two perspectives exist. One perspective is that of the researcher/program planner or sponsor of the educational activity. The other is that of the learner. From the first perspective, needs assessment:

1) accommodates delivery of learner-oriented instruction(content and format) through identification of learning needs,
2) facilitates development of program objectives which can be used to measure the effects of a given educational activity,
3) provides information which can lead to adjustment of program objectives,
4) provides a way of remaining abreast of educational needs through some form of regularized measurement or appraisal,
5) facilitates prioritization of needs to be met with regard to resources of the provider of educational programs,
6) contributes to the development of an empirical data base for future decisions related to educational programs or policy,

7) provides information about learning and teaching styles related to educational programs,
8) contributes to increased learner group involvement in educational planning, and
9) tests policies, statements, and potential learning activities within the community.

From the perspective of the adult learner, educational needs assessment:

1) provides the opportunity for formal and informal participation in identification of a needed learning activity, (e.g., interviews, questionnaires, and advisory groups),
2) facilitates the provision of relevant learning activities,
3) provides opportunity for community involvement in the solution of pertinent problems,
4) provides an opportunity for conscious and meaningful self-evaluation,
5) provides information on sponsoring institutions' policies, statements, and potential learning activities, and
6) facilitates prioritization of learning needs.

The needs assessment process guides the program planning process by attempting to identify specific needs (desiderata) within a more general notion of what is and what ought to be. In Walker's naturalistic model of program development, the platform includes a vision of what is and a vision of what ought to be, within the system of values and beliefs that the program planner brings to his task. Through deliberation (i.e., information gathering, analysis, and utilization), the more specific desiderata must be identified, and an effective program design should result. The classical model of program planning also begins with a vision of what is and what ought to be. However, the classical program planner attempts to separate his/her values from that vision. Ideally, formal needs assessment explicates the planner from his/her value system. The dynamic is the same in both types of program planning:

Classical Planning	Naturalistic Planning
The planner begins with a notion of needs (scientifically or otherwise defined), and embarks upon the program planning process with that notion.	Platform
Data is gathered in an effort to make effective design decisions and determine learner objectives,	Deliberation
so that learners may experience a more meaningful and effective educational activity.	Program Design

While distinctions between activities in the classical model may be more defined than in the naturalistic model, the flow of activities for each model is similarly guided by the concepts of need and needs assessment.

Definition of Continuing Medical Education

The concept of an educational continuum in medicine is not a new one[65]. A report by the Commission on Medical Education of the American Medical Association[66] published in 1932 states:

1. That the education sequence from premedical education to retirement from practice be looked upon broadly as a single problem, not a succession of isolated and unrelated experiences.
2. That the continued education of physicians is synonymous with good medical practice, and provisions should be made ultimately whereby every physician will be able to continue his education. The time may come when every physician may be required in the public interest to take continuation courses to insure that his practice will be kept abreast of current methods of diagnosis, treatment, and prevention.
3. That the problems of postgraduate medical education are closely interwoven with those of practice and education. The great need at the moment is to secure joint leadership in a program which will embody the educational ideals and methods of the university and the highest type of medical practice.

Richards[67] identifies four distinct phases of the medical education continuum. (See Table 1)

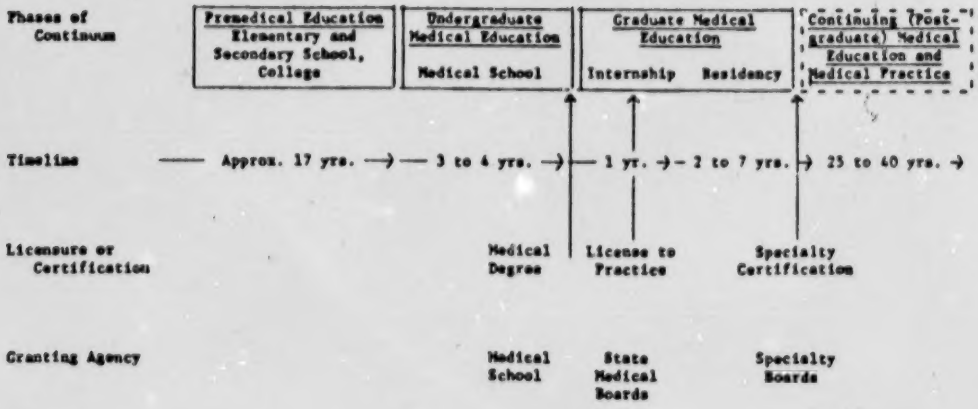


Table 1: Richards' Continuum of Medical Education

Little more than 10 years ago continuing education was a term only just coming into use in many countries. Now it is common parlance[68]. In some parts of the world, postgraduate education is a synonym for continuing education. In other regions, the term (postgraduate education) may refer to any education after completion of a basic program; including specialty training. Recognizing these differences, a World Health Organization Expert Committee defined continuing medical education (CME) as follows:

> . . . the training that an individual physician undertakes after the end of his basic medical education, and where applicable, after the end of any additional education for a career as a generalist or a specialist--training to improve his competence as a practitioner (not with a view to gaining a new qualifying diploma or licence)[69].

The definition of the WHO Committee is represented diagramatically in Figure 9:

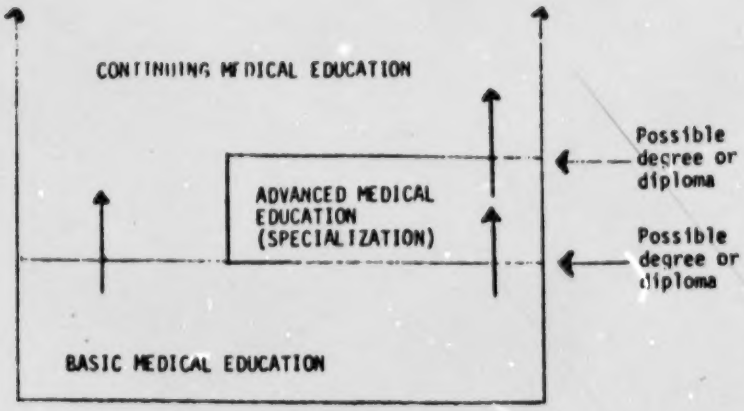


Figure 9: WHO Committee's Stages of Medical Education

The American Medical Association (AMA)[70] defines CME as follows:

> Continuing medical education consists of those educational activities engaged in by individuals possessing a degree of doctor of medicine which are primarily designed to keep them abreast of their own particular field in medicine. Such activities are intended both to refresh the individual in various aspects of his basic medical education and inform him of the new developments within his field, and do not lead to any formal advanced standing in the profession.

Both the WHO and the AMA definition of CME coincide with the fourth phase of Richards' continuum, (i.e., continuing medical education follows specialty certification). The AMA indicates that CME does not lead to formal advanced standing in the profession. The WHO indicates that CME does not lead to a new qualifying diploma or license.

Purpose of Continuing Medical Education

In his landmark report of 1910, Abraham Flexner[71] states:

> The postgraduate school as developed in the United States may be characterized as a "compensatory adjustment". It is an effort to mend a machine that was predestined to break down. Inevitably, the more conscientious and intelligent men trained in most of the medical schools herein described must become aware of their unfitness for the responsibilities of medical practice; the postgraduate school was established to do what the medical school had failed to accomplish.

The AMA statement of objectives for CME[72] adds an introductory component to the remedial focus documented by Flexner. The AMA states that objectives for CME programs should include: 1) changes in the attitude and approach of the learner to the solution of medical problems; 2) correction of outdated knowledge; 3) the explication of new knowledge in specific areas; 4) the introduction to and/or mastery of specific skills and techniques; and alteration in the habits of the learner. The ultimate aim of continuing medical education is improved health care of the patient. Continuing education should make it possible for each physician to use in his practice the modern medical knowledge that continuously becomes available.

The World Health Organization[73] reflects the AMA concern for the delivery of new knowledge. They state that the sole objective of CME is to assist physicians to maintain and extend their professional competence, whatever the area of medical practice. The ultimate purpose of continuing education is to improve the quality of preventive and curative care given by physicians.

Rubenstein [74], Kampmeier[75], Jessee and Goran[76], and Silverman and Hurst[77], represent the conventional belief of most physicians and physician educators. Their works support the contention that the ultimate aim of continuing medical education is to improve health care of the patient. Whether or not CME can affect competence and result in improved health care delivery is still an issue[78].

Competence

The dictionary[79] defines competence as the condition or quality of

being competent. Competent means 1) well qualified; capable; fit [a competent doctor] 2) sufficient; adequate [a competent understanding of law] 3) permissible or properly belonging (with to) 4) legally qualified, authorized or fit.

The dictionary definition accounts for at least three disparate interpretations of the term competent. Clearly, the differences between perceptions of well qualified (definition #1), sufficient (definition #2), and permissible (definition #3) might well serve as points on an ordinal scale.

Dobbert[80], and Cyrs and Dobbert[81], identify components of competence. Competency is defined as an intellectual, attitudinal, and/or motor capability derived from a specified role and setting, and stated in terms of performance as a broad class or domain of behavior.

Knox[82]; Pennington, Means, and Elliott[83], and Baker and Gordon[84] identify three comparable components: 1) attitude, 2) knowledge, and 3) skills. The differences between the components are better delineated when viewed in a program planning context. For instance, a very different set of learning experiences would be appropriate if the purpose of a program was to develop interest in geriatrics, or to acquire knowledge about geriatrics or to develop skill in diagnosing health problems particular to older people.

Miller[85] identifies components of clinical competence pertaining to orthopedics, through an analysis of over 1,700 critical incidents contributed by practicing orthopedists. Those competencies are relevant to most areas of medicine. They are listed here:

1. Skill in gathering clinical information:
   a. Eliciting historical information
   b. Obtaining information by physical examination

2. Effectiveness in using special diagnostic methods:
   a. Obtaining and interpreting x-ray films
   b. Obtaining additional information by other means

3. Competence in developing a diagnosis:
   a. Approaching diagnosis objectively
   b. Recognizing conditions

4. Judgement in deciding on appropriate care:
   a. Adapting treatment to individual cases
   b. Determining extent and immediacy of therapeutic needs

5. Judgement and skill in implementing treatment:
   a. Planning the operation
   b. Making necessary preparations for the operation
   c. Modifying operative plans according to situation

6. Effectiveness in treating emergency patients:
   a. Handling patients
   b. Performing emergency treatment

7. Competence in providing continuing care:
   a. Attention postoperatively
   b. Monitoring patien's progress

8. Effectiveness of physician-patient relationships:
   a. Showing concern and consideration
   b. Relieving anxiety of patient and family

9. Accepting responsibility for the welfare of the patient:
   a. Recognizing professional capabilities and limitations
   b. Relating effectively to other medical persons

In listing a definition of competence, the AMA[86] cautions that the true quality of medical care, the maintenance or restoration of the patients' health and well being as a result of appropriate human efforts by the health care team given at a reasonable cost, can never be completely evaluated any more than it can be completely defined; nonetheless, a reasonable, workable estimate of competence can be made. The AMA definition of competence is as follows:

> A measured level of patient care outcomes (end results) achieved by an individual health practioner, or group of health practitioners (team), that is acceptable when compared to a standard developed by a current consensus, initially, or self and peers, and, ultimately, by relevant outside sources (criterion groups).

Essentially, the AMA definition indicates that competence cannot be measured concisely, but that it can be approximated through comparative examination. That is, patient care outcomes can be compared to standards developed by one's self, peers, or other criterion groups. Gaps in knowledge, skills, and attitudes should register accordingly.

The propriety of standards for determining competence is open to question. Development of standards by one's self necessitates some skill and is limited, since standards are derived from a system-limited purview. That is, innovated standards may not develop since in-put from outside the medical care system is limited. Development of standards by other criterion groups suffers from the same shortcomings as self and peer standard development.

Pennington and Moore[87] list four role perspectives which must be considered for development of standards and other issues. The public demands that quality medical care be available and delivered to all its members. The medical profession must be concerned about disagreement within the profession regarding theories and approaches to medical practice. The educator must consider whether or not continuing medical education can guarantee competent health care delivery. The individual physician must face the problem of knowledge obsolescence.

Houle[88] states that generations of scholars have fought against great obstacles to embody the highest principles of professionalism, but now professions are in peril both by invasion from without and by decay from within. He suggests only two possible alternatives: 1) set up newer, lower,

and more realistic standards, or 2) raise the level of practice.

The Need for Organized Continuing Medical Education

Ashbaugh and McKean[89] state a widely held belief:

> The explosion in medical knowledge over the last 25 years has increased the demand for some form of continuing education.

The notion of an "explosion in medical knowledge" receives support from Garrison[90], Nakamoto and Verner[91], Rockwell[92], Rosenstein[93], Coggeshall[94], Derbyshire[95], and Frandson[96]. It is a widely held belief. Toffler[97] finds:

> Prior to 1500, by the most optimistic estimates, Europe was producing books at a rate of 1,000 titles per year. This means, give or take a bit, that it would take a full century to produce a library of 100,000 titles. By 1950, four and a half centuries later, the rate had accelerated so sharply that Europe was producing 120,000 titles a year. What once took a century now took only ten months. By 1960, a single decade later, the rate had made another significant jump, so that a century's work could be completed in seven and a half months. And, by the mid-sixties, the output of books on a world scale, Europe included, approached the prodigious figure of 1000 titles per day.
>
> One can hardly argue that every book is a net gain for the advancement of knowledge. Nevertheless, we find that the accelerative curve in book publication does, in fact, crudely parallel the rate at which man discovered new knowledge.

Credulity of the Toffler statement has been bandied about and tested by many interested scholars. Here it serves only to illustrate (specifically in parallel with medical knowledge) an assumption internalized by many medical educators.

Curricular half life is a concept which accompanies the notion of a knowledge explosion. Figure 10 illustrates the concept of curricular half-life[98].

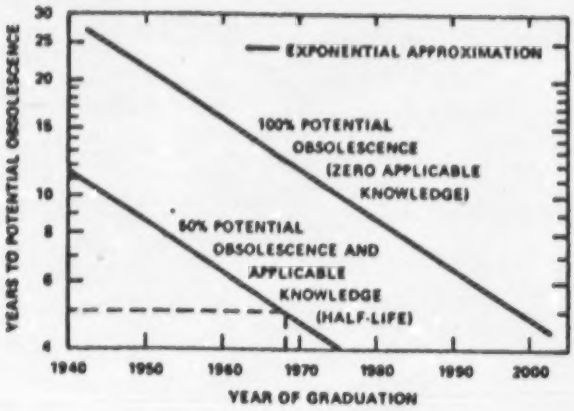


Figure 10: Decreasing Number of Years to a Given Percentage of Potential Obsolescence

The vertical axis represents years to obsolescence--the years it would take for a given percentage of the graduate's education to become obsolete if the graduate did not learn anything after graduation. The horizontal axis is the year of graduation. Two lines are plotted with the lower line giving the half life of the curriculum. That is the number of years required for a program to change 50% after a given date. The upper line displays the time to 100% obsolescence. That is the expected years after graduation in which the entire content of the four year undergraduate program will change[99].

VanCleve[100], Biedenback[101], Illich[102], Blum[103], Wan et al.[104], Currie and Rogers[105], and Stewart[106], cite increasing demand for quality health care as another reason CME is needed. Physicians must maintain competence to cope with the growing number of patients and their expectations. Blum states:

> National expectation, political promisers, and health care purveyors have all and always promised that no one will go without health care. Our cards are being called by a society that believes it can afford anything within reason.

Illich[108] explains the social phenomenon described by Blum as "the crisis of medicine". Illich states that the Westernized public has learned to demand effective medical practice as defined by the progress of medical science, and that people have lost the right to declare themselves sick. People now accept their claims to sickness only after certification by medical bureaucrats. Stewart[109] notes that care should be taken in

distinguishing between demand and need for health care. That is, the demand for health care is generally considered higher than the need for health care.

Pickett[110], Lewis[111], Smith[112], and Mann et al[113], indicate that most doctors feel it is of great importance to have the opportunity to utilize their present skills and to acquire new knowledge and skills. The determination of the physician to continue his education is the sharpest indicator of the need for CME. Houle[114] suggests that as the occupant of a highly privileged and protected role, the professional (physician) feels a sense of obligation to his clients (patients) and to society to keep his service at the highest possible level.

Miller[115] contends that we are convinced that it is our failure to apply new knowledge which represents the weakest link in the chain of assuring the highest quality of medical care. When, in fact, correction of major health problems does not appear to require any substantial body of new knowledge. Rather, it requires that physicians use the knowledge they already have in a different way or more fully exhibit the professional attitudes that traditionally have characterized the physician's role.

Miller also contends that need-based instruction is a relatively new concept to medical educators, and that physicians are not eager to expose their hospital work to others. Further, he suggests, that a physician's office practice is virtually impregnable.

Finally, Miller asserts that there is no connection between continuing medical education and improved patient care. It is only assumption that deficiencies in health care exist and that they could be corrected through appropriate continuing education.

Lewis[116] supports Miller's contentions in two respects. He suggests that in a sweeping generalization the demand is made that, because the knowledge that one acquires at a given point is lost in a period of 5 to 12 years, the physician should continually restore his knowledge. Lewis contends that knowledge necessary for the everyday practice of medicine is constantly recalled, refined, and made more effective by continuous psychological reinforcement. The knowledge which is lost is that which because it lacks relevance, has not been used.

Lewis also suggests that "the explosion of medical knowledge" is a cliche invoked for the purpose of demanding continuing medical education. He finds that revolutionary new concepts in all scientific endeavors do not come with the rapidity of machine gun fire. "Much of the explosion of medical knowledge", he states, "constitutes merely additions to a large corpus of information and knowledge added to old paradigms, thus adding merely redundancy".

In spite of the issues raised by Miller and Lewis, the need for organized continuing medical education characterizes the conventional wisdom of the profession. The Commission on Physicians for the Future[117] finds that with the rapidity of changes in modern medicine, it is crucial that the practicing physician participate in continuing education. The American Medical Association[118] states:

> Physician competence is a fundamental element of quality medical care, and, likewise, medical education is basic to competence. Medical education's goal is the production of physicians equipped to provide optimal care for the public. The ultimate evaluation of an educational system is the effectiveness of its products. Questions raised about quality of care and professional competence are ones of primary interest to medical education. The growing problem of malpractice suits gives added impetus to this issue.

Continuing medical education is universally endorsed as the principal vehicle for maintaining medical competence[119].

PROGRAM PLANNING IN CME

> ... it is asserted that the process by which particularly effective and innovative programs of continuing professional education are developed, is basically the same across all professional fields. It is further asserted that this process by which effective programs of continuing professional education are developed, it similar to the general process by which effective programs of adult and continuing education are developed...(Alan B. Knox[120])

Pennington and Green[121] examined continuing education program planning processes across six professions in eleven major institutions of higher education. Results supported the idea that the planning process comprised a series of tasks and decisions that seemed to cluster around six groups of activities. The term cluster is used to describe a single group of activities. The General Planning Model identified by Pennington and Green is portrayed in Figure 11.

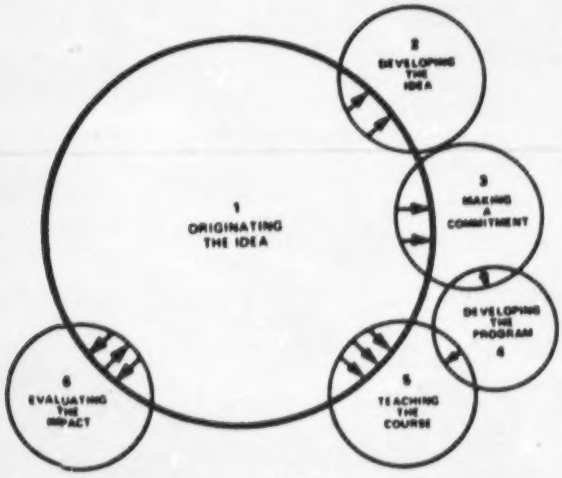


Figure 11. The General Planning Model of Pennington and Green

Several program origins characterized the first cluster. Ideas originated from: 1) a formal needs assessment, 2) requests from a client or client group, 3) the availability of project monies, 4) legislative mandate, and 5) suggestions from campus faculty and staff.

Activities of the second cluster were those designed to test and refine the idea before a commitment to proceed with a program was made. Activities included:

1. Test the idea informally with other practicing professionals to explore the extent of interest.
2. Test the idea with campus peers to help identify resources and begin to make the idea more specific and manageable.
3. Conduct a review of literature as a source of current ideas related to the program request.
4. Assess institutional interest and delivery capabilities.
5. Enlist planners to shape the possible response to the request.
6. Conduct some market analysis to see if the program would pay for itself.
7. Conduct a structured needs assessment focusing on the extent of interest in the idea.

A commitment to go through with the program characterized the third cluster. Activities included:

1. An instructor was selected and in some instances provided with orientation concerning teaching adults.
2. A decision was made concerning the use of campus faculty members or outside experts.
3. A decision was made about using an existing campus course, or developing a new learning activity for the program.
4. Some consideration was given to why the professionals wanted to attend the activity and what the probable characteristics of the target audience would be.
5. The logistics of recruitment, publicity and arrangements for facilities were started.

Instructional design was the focus of activities in the fourth cluster. Activities were: 1) determine objectives, 2) state objectives, 3) develop subject matter, 4) possibly review literature, 5) design or accumulate materials, and 6) select instructional methods.

The learning activity occurred in cluster five. It usually occurred as planned, but some flexibility was maintained that permitted changes in focus and methods in response to learner needs. Some evaluation of the activity occurred in this cluster.

Cluster six was made up of six activities: 1) determine methods for judging the success of the program, 2) determine what to evaluate, 3) develop evaluation instruments, 4) determine who would use the evaluation, 5) administer the evaluation, and 6) utilize the evaluation results.

The Pennington and Green planning model is characterized by the rigorous step-wise progression of classical planning, as well as the less rigid activity flow of the naturalistic model. The six clusters of activity are sequenced systematically (in the traditional mode). Yet, the planning process is engaged through deliberation (in the naturalistic mode).

Hutchinson[122] suggests that needs, readiness to change, and stable patterns of cooperation become more perfectly defined as the program planning process continues. Hutchison lists seven major steps in planning. They are:

1) Formulate and enunciate the philosophy: "Who are we, what do we believe, why do we plan? What will happen if we do not intervene?"
2) Clarify the goals: "What are we working toward?"
3) State the objectives: "What specifically are we going to do, in what sequence, and when?"
4) Assess obstacles and restraints: "What will we do about them?"
5) Determine scope and thrust of program activities.
6) Control through management: "What personnel needed? Who does what? What financial base is required? How do we keep the activity on the pre-determined track?"
7) Evaluate and revise: "How will we measure and monitor progress, and feed in new information for continued effective programming? How will we know that we have accomplished what we set out to do?"

Charters and Blakely[123] illustrate another general model of continuing education program planning. (See figure 12) This model is an elaboration of what Charters and Blakely call the basic problem-solving process. The

basic problem-solving process has six steps: 1) recognize a difficulty, 2) analyze the difficulty and generate a testable hypothesis, 3) consider all available alternatives of trying to solve the problem and plan and organize an attack, 4) implement the course of treatment, 5) assess the outcome of the treatment, and 6) determine steps to be taken next, as indicated by the outcome.

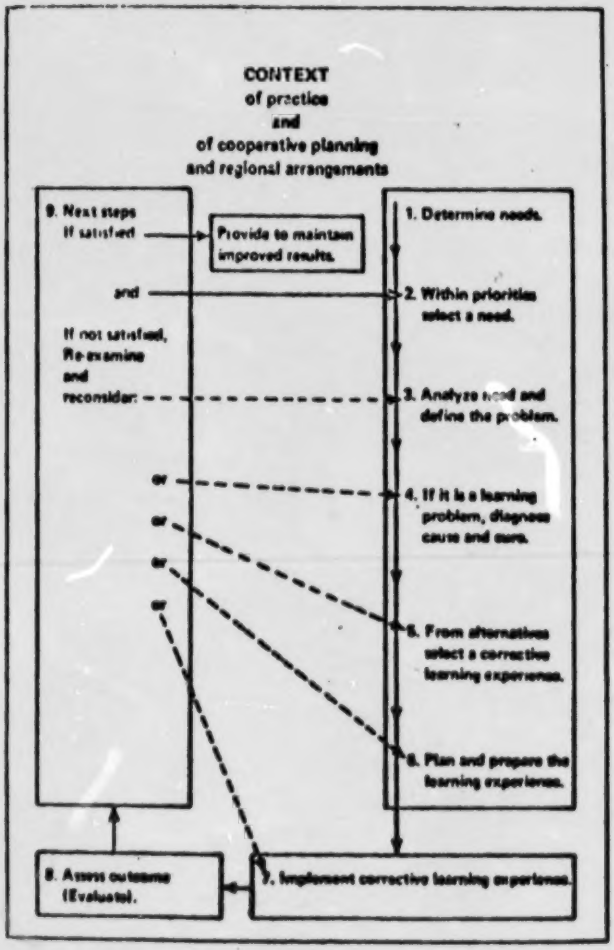


Figure 12: Charters' and Blakely's Model of Continuing Education Process[124]

Dobbert[125] presents a general model of competency based curriculum development (See Figure 13). The model is comprised of seven procedures.

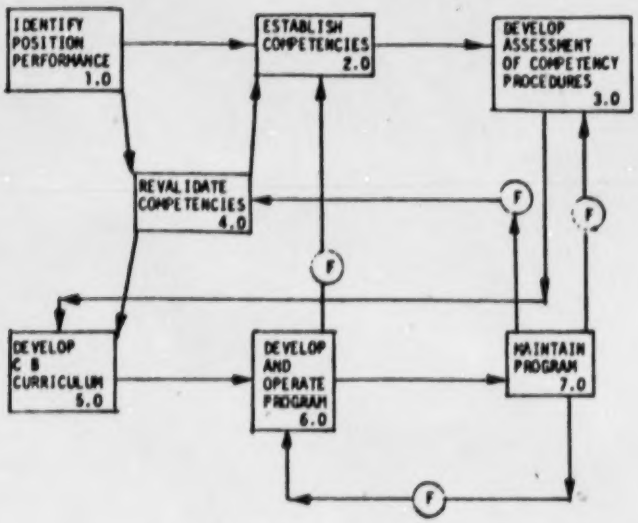


Figure 13: Dobbert's General Model of Competency Based Curriculum Development

In describing the model, Dobbert states that the first procedure (1.0) in Figure 13 results in identification of the position or performance for which instructional development is appropriate or should be aborted. Competencies and performance levels are identified as procedure (2.0). Revalidation of competencies (4.0) when feedback from the maintenance of curriculum procedure (7.0) identifies a need. Assessment procedures (3.0) are developed for measurement of the competencies as an attribute of an individual. Almost concurrently, curriculum is developed (5.0) and tested using the assessment procedures (3.0) to measure attainment of the competencies by those completing the curriculum. Concurrently, a curriculum delivery and operation procedure (6.0) is developed. This operational planning is implemented and modified as experience and performance directs.

Feedback from pilot testing and implementation of instruction directs attention to competencies with an inappropriate criteria level or instruction. When the program is operating a strategy for maintaining it is implemented (7.0). This procedure provides feedback for operation in (6.0), assessment modification in (3.0), and the revalidation of competencies in (4.0). Program maintenance is the heart of the model. It insures curricular viability.

Brown and Uhl[126], and Miller[127] contend that despite existing program planning models, a conceptual scheme has not been developed which would relate educational programs directly to identified physician- and patient-need, and would also demonstrate for the physician and the educator that the need has/has not been met. Such a conceptual scheme would require that patient care be judged by objective criteria.

APPROACHES TO NEEDS ASSESSMENT IN CME

Accreditation requirements of the AMA[128] stipulate that educational objectives should be based on CME needs. CME needs may be described in terms of physicians' knowledge, skills, and/or attitudes.

Storey, Williamson, and Castle[129] warn that learning needs of physicians are complex. They suggest:

> There has been a tendency to identify newer methods of communication as the means to close the gap that is thought to exist between an ever-increasing store of medical knowledge and its application to clinical practice. This is an over-simplified solution to the problems of continuing medical education. Such a solution, while convenient, overlooks the ultimate problem--that the communicators may in fact be quite unaware of what it is that must be communicated.

Green's[130] first cluster of activities indicates sources for ideas of what continuing medical educators attempt to communicate (See Figure 14).

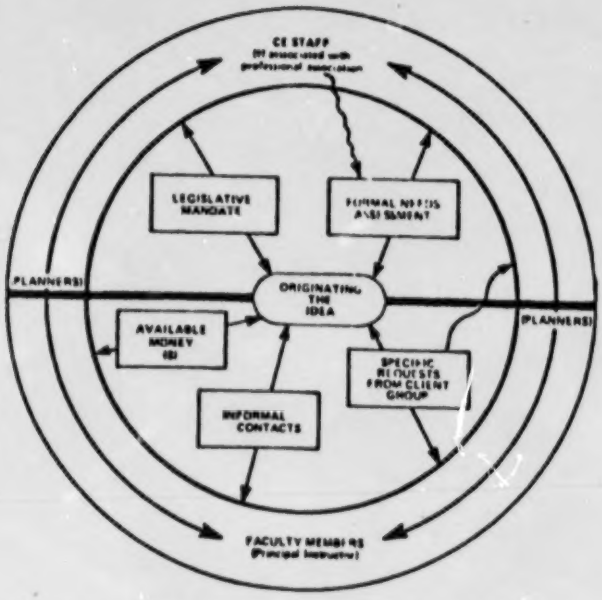


Figure 14: Green's Originating the Idea Cluster

A number of approaches to assessment of physician learner needs have been utilized by program developers. Donabedian[132] designates three types of appraisal. They are: 1) evaluation of structure, 2) evaluation of process, 3) evaluation of outcomes. Appraisal of structure involves the evaluation of the settings and instrumentalities available and used for the provision of care. The term structure, as used here, also signifies the properties of the resources used to provide care and the manner in which they are organized. Assessment of process is the evaluation of the activities of physicians . . . in the management of patients. Assessment of outcomes is the evaluation of the end results in terms of health and satisfaction.

Two assumptions underly appraisal of structure. The first is that better care is more likely to be provided when better qualified staff, improved physical facilities and sounder fiscal and administrative organization are employed. The second assumption, according to Donabedian, is that we know what is good in terms of staff, physical structure, and formal organization. It is apparent and generally conceded that appraisal of structure is too indirect to be definitive.

The process assessment model focuses on the evaluation of what was done. It is retrospective. There are essentially three types of process assessments: 1) peer review, 2) medical audit, and 3) utilization review[133]. Methods include review of tests, procedures and records which a physician has ordered. Participants and roles are defined by the type of process assessment.

Peer review is characterized by three steps: 1) find out what needs to be changed, 2) learn how to change it, and 3) change it[134]. Peer review is generally practiced internally by a health care institution as part of its own responsibility.

Medical audit stresses a comparison of what was done with what was promised. Existing standards of patient care may be adopted or new ones developed against which actual performance is compared. Standards may be adopted or developed with peers or supervisors. They may also be non-collaborative efforts.

Utilization review is the most common process assessment. It is meant to evaluate propriety of: 1) hospital admissions, 2) length of stay, 3) ancillary tests, and 4) charges for care rendered. Utilization review can be conducted internally or externally.

Outcome assessment is more general than process assessment. It considers the providers, the patients and the general medical care system. Two outcomes are stressed: 1) clinical outcomes (diagnosis and therapy) and 2) economic outcomes (cost for both patient and provider). Outcome assessments are practiced by Professional Standard Review Organizations and Joint Commission on the Accreditation of Hospitals. Many other local and state review organizations also rely upon the outcome assessment method.

Houle[139] suggests that men and women know what they need to learn. The

task of the educator of adults is to discover what it is and provide it for them. In keeping, some continuing medical educators have instituted programs of learner self-assessment.

The most popular type of self-assessment is employed by the University of Wisconsin. The Individual Physician Profile is a technique by which a physician can study his practice and relate his continuing education to it[136]. It is a process whereby an educational prescription is developed for a single practicing physician, based upon three types of data:

(a) A profile of the practice is developed by a sampling method, whereby the physician reports on every patient contact one day a week for a month. The profile represents a four-day sample, or about 200 patient contacts for a family physician.

(b) A 125 question, multiple-choice test related to the practice profile is taken by the physician.

(c) An hour-long interview is conducted between the physician and an educational consultant, based on the practice profile, test results, and other subjective information about him and his practice. Items discussed are his personal learning styles, his perceived strengths and weaknesses, and aspects of office management which may affect quality of care[137].

Stein[138] suggests self-assessment of needs through the use of formal and informal self-assessment programs. He provides physicians with various directories and references, wherein physicians adopt an appropriate heuristic, or inquire for further information. For instance, Stein suggests to the physician-learner:

> Start by jotting down whatever learning needs occur to you. DON'T worry about whether your list includes little or big items.

Another alternative Stein suggests is a formal self-assessment program, "Clinical Simulations, Selected Problems in Patient Management".

Brown and Uhl[139] present the bi-cycle concept for assessing needs

in the hospital setting. (See Figure 15) In the bi-cycle concept the patient-care cycle begins with the patient and his interaction with his physician who: 1) determines all the patient's problems, and 2) compiles a problem-oriented record. The problem oriented records are weighted by disease entity. The diseases which cause the greatest disability among hospitalized patients are ranked on the basis of preventable disability. An audit committee in each department sets performance criterion. When the department adopts the ideal criterion of management or performance, it becomes the standard against which actual physician performance is judged. As actual performance is compared to criterion performance through an evaluation process in the audit committee, significant gaps can be identified. The gaps represent improvement potential.

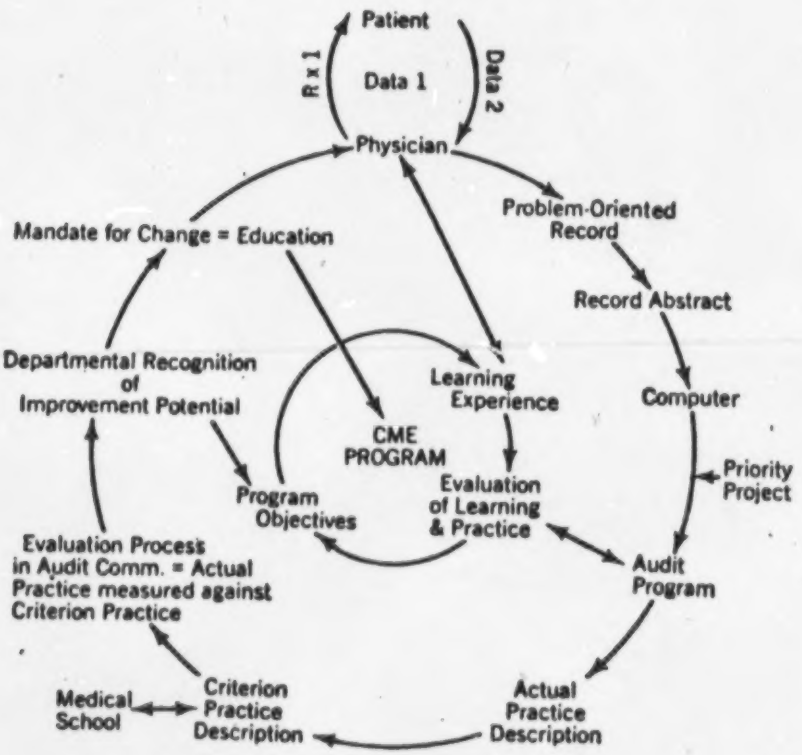


Figure 15: Brown's and Uhl's Bi-cycle; Relation of Patient-Care and Education Cycle

Physician actions and behavior for closing the gap to improve patient care can then be translated directly into education program objectives. With defined educational objectives in terms of behaviors, the bi-cycle concept proceeds from the patient-care cycle to the educational cycle.

Mazmanian and Pennington[140] suggest the use of existing data sources for needs identification. Information is gathered from two sources: 1) individual practitioners, and 2) others related to health care delivery. Information is classified according to Bradshaw's[141] conceptual scheme: 1) normative need, 2) felt need, 3) expressed need, and 4) comparative need. Normative needs are those which the experts define. These experts often set acceptable or desirable standards of practice and then compare them with current practice as they perceive it. A felt need is equated with want. Physicians may be asked, "Do you want information on the most recent and effective treatment of Dermatophytosis?" An affirmative response is a felt need. An expressed need is a felt need turned into action. Those who plan CME for others may perceive expressed needs in the form of requests for topics from program participants. The individual physician requesting the program, sifting through journals, or seeking consultation regarding a particular problem is expressing educational need. Comparative needs are those identified by studying different individuals, groups, or communities who should be expected to have similar characteristics.

All relevant information is analyzed in terms of current physician competence vs. desireable knowledge, skills, or attitudes. As information is acquired, gaps become identifiable. Information sources include but are not limited to: 1) mortality rates, 2) morbidity rates, 3) CME enrollment statistics, 4) federal and other research priorities, 5) presentation outlines, 6) requests from individual practitioners, 7) requests from groups of practitioners, 8) course catalogues of other sponsors, and 9) professional

journals.

Wender, et al,[142] suggest that physicians' learning needs may be identified through comparison of literature search requests. Records of requests submitted by practicing physicians may be tabulated and compared against requests of fourth year students serving preceptorships. Patterns of requests may indicate learning needs of practitioners.

A number of formal needs assessment techniques may facilitate the origination of an idea. Survey research is one of the most commonly employed. Frequently, this method is directed more toward preliminary exploration than educational needs assessment. It is generally constructed to provide a clientele analysis.

Clientele analyses identify physician characteristics and their attitudes toward CME. Variables generally include specialty, type of practice, setting, recency of graduation from medical school, whether or not CME should be required times and places most convenient for facilitating attendance, estimates of time spent by physicians on CME activities, and types of CME activities in which potential participants are engaged[143].

THE ROLE OF NEEDS ASSESSMENT IN CME PROGRAM PLANNING

Observations of the role of educational needs assessment in CME program planning are not to preclude the observations made in the more general context of adult education program planning. Rather, the CME-specific observations should be appended and viewed as detail in the process of describing the role of needs assessment in the program planning process.

It is the charge of needs assessment to: 1) monitor the knowledge, skills, and attitudes of practicing physicians, 2) monitor breakthroughs in medical research, and 3) identify learning gaps between physicians' present competencies and desireable competencies.

Two assumptions are inherent to this task. The first assumption is that knowledge, skills and attitudes can be monitored with an evaluative sensibility. The second assumption is that medical research identifies innovations which are applicable to the practice setting.

For the public, needs assessment attempts to bolster the quality of medical care by identifying physicians' learning needs which can be met by appropriate educational activities. Needs assessment fulfills accreditation requirements which are aimed at satisfying legislative requirements. Needs assessment attempts to define physician competence in terms of social need and social demand.

For the medical profession, educational needs assessment provides valuable information which contributes to the development of performance and other professional standards. Needs assessment helps to define competence by identifying agreement and disagreement within the profession about theories and approaches to medical practice. The concept of needs assessment functions to buffet and accommodate social and legal demands for physicians to make concerted efforts at maintaining and extending their competencies. While the concept of need based CME serves public demand for physician education, needs assessment affords the profession an opportunity to ensure that social and legal demands are met with rational medical input. Output of the needs assessment process should reflect the balanced infusion of all three sources. Needs assessment provides the medical profession with educational expertise which helps to ensure effective programming of CME activities.

For the educator, needs assessment provides information on learning format and content preferences of physicians. Needs assessment identifies

delivery capabilities of existing continuing education structures. It considers supply of resource people, cost/benefit ratio, strength of institutional commitment, and other implications of implementation of particular educational activities. Needs assessment provides information on the structure, process, and outcomes of medical care delivery.

For the individual physician, needs assessment provides more meaningful learning opportunities through the determination of learning objectives based on needs assessment information. It provides the physician with an opportunity to determine his learning needs in consort with others (e.g., educators, consultants, or peers) or non-collaboratively. Needs assessment directs the physician to a variety of learning activities through which he may fulfill certification and other continuing education requirements. Needs assessment suggests the responsibility of lifelong learning to the physician. Needs assessments intimates the various responsibilities of lifelong learning to the physician.

ABBREVIATED NOTES

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